

# Telecommunications Analysis Services

## Outputs

- Internet access on a cost reimbursable basis to the latest ITS engineering models and databases for U.S. industry and Government agencies.
- Contributions to the design and evaluation of broadcast, mobile, radar systems, personal communications services (PCS) and local multipoint distribution systems (LMDS).
- Standardized models and methods of system analysis for comparing competing designs for proposed telecommunication services.

The Telecommunications Analysis Services (TA Services) program gives industry and Government agencies access to the latest ITS research and engineering outputs on a cost reimbursable basis. It uses a series of computer programs designed for users with minimal computer expertise or those with in-depth knowledge of radio propagation. The services are updated as new data and methodologies are developed by the Institute's engineering and research programs.

Currently available are: on-line terrain data with 1-arc-second (30m) resolution for CONUS and 3-arc-second (90m) resolution for much of the world, and GLOBE (Global Land One-km Base Elevation) data for the entire world; the U.S. Census data for 1990, 1997 update, and 2000; Federal Communications Commission (FCC) databases; and geographic information systems (GIS) databases (ArcInfo). For more information on available programs, see page 64 of the Tools and Facilities section or call the contact listed below.

Over the past 20 years, TA Services has developed both generic propagation models for a wide variety of applications in many frequency bands and application specific models used for a particular type of analysis such as High Definition Television (HDTV). These models are placed on the TA Services web access system for use by customers with active accounts on the TA Services system. These customers can activate models, enter information about their broadcast equipment and produce a generic transmitter coverage such as that shown in Figure 1 for a typical broadcast television station using the Communications System Performance Model (CSPM) application program. These coverages follow FCC guidelines and requirements in order to show both the signal coverage and the population that resides within the various analysis contours.

Users can also combine many individual transmitter coverages into a composite coverage such as those shown in Figure 2. This allows the user to determine both single transmitter performance as well as integrated system performance.

TA Services has assisted the broadcast television providers of the U.S. with their transition to digital television (DTV) by providing an application specific model for use in advanced television analysis (HDTV, advanced television, and DTV). This model allows the user to create scenarios of desired and undesired station mixes. The model maintains a catalog of television stations and advanced television stations

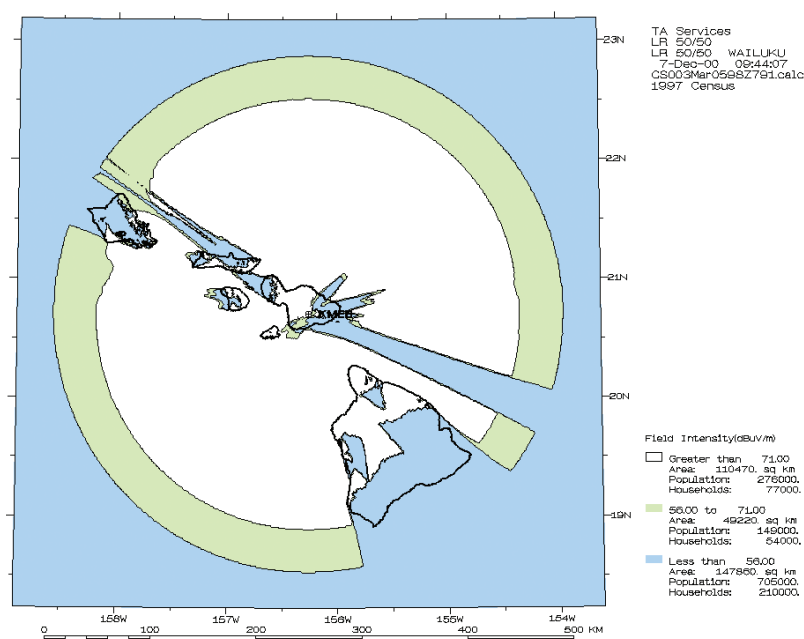


Figure 1. Sample output of the CSPM model of a transmitter located in Hawaii.

from the FCC from which these analyses are made. The results of these studies show those areas of new interference and the population and number of households within those areas so that designers can mitigate possible interference situations before they become a problem. The model can also determine the amount of interference a selected station gives to other stations. This allows the engineer to make modifications to the station and then determine the effect those modifications have on the given interference. In addition to creating graphical plots of signal levels, the program creates tabular output which shows the distance and bearing from the selected station to each potential interferer as well as a breakdown of the amount of interference each station in the study contributes to the total interference.

TA Services also has assisted the Public Broadcasting System of the U.S. and the National Weather Service in the determination of their system coverage and public outreach. These two major public providers ensure that more than 95% of all Americans have access to potentially life-saving information in the event of a national crisis of any kind. With the use of the TA Services system and databases, these two national systems were able to improve and verify the coverage of their large diverse systems. This has provided invaluable services to the people of the southeastern portions of the U.S. in this particularly severe hurricane season.

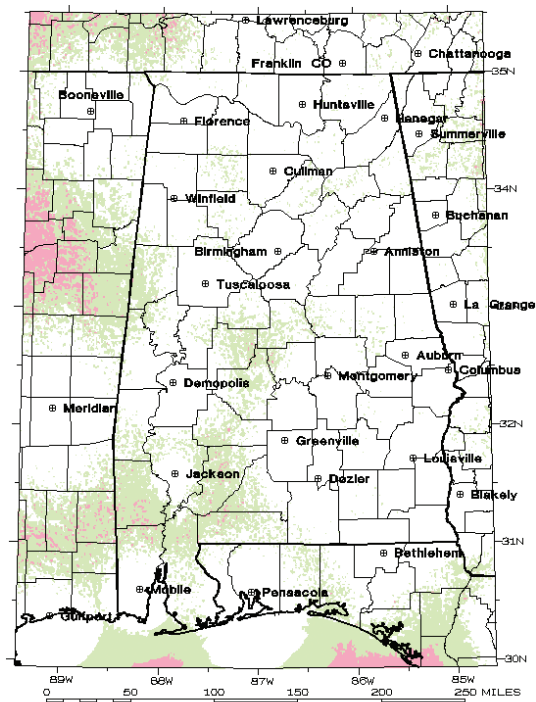
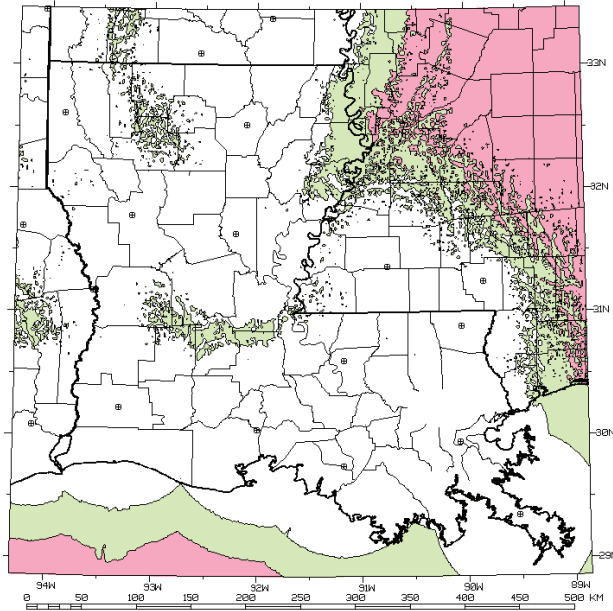
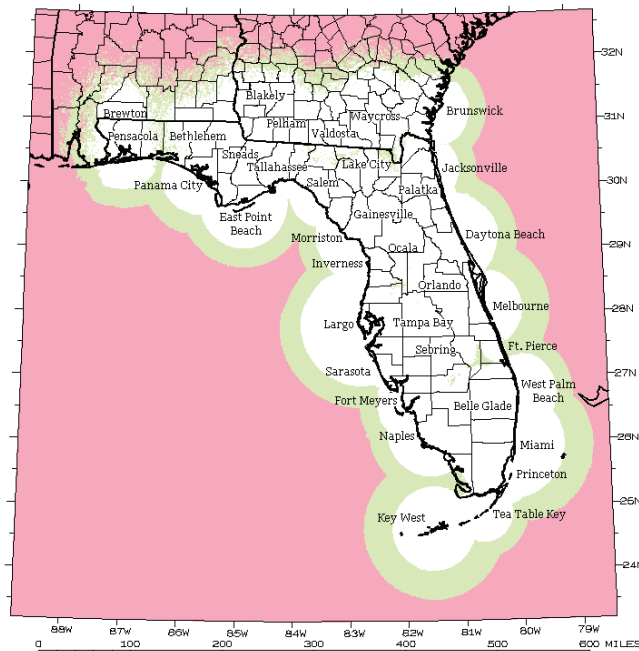


Figure 2. Composite coverage of National Weather Radio for some of the Gulf States (Louisiana, top; Alabama, above; Florida, left). White areas have good coverage, green areas have marginal coverage, and pink areas have signal below the minimum.

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